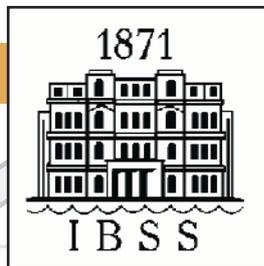


THE A.O. KOVALEVSKY INSTITUTE OF BIOLOGY OF THE SOUTHERN SEAS



The A.O. Kovalevsky Institute of Biology of the Southern Seas (IBSS) of the National Academy of Sciences of Ukraine (NASU) is one of the oldest and most respected marine research centers in the world. The first biological station in Ukraine (then, as part of the Russian Empire) and the third in Europe, was founded in Sevastopol in 1871 at the initiative of the prominent Russian explorer Nikolai N. Miklukho-Maklai. The first Director of Sevastopol Biological Station (1889-1902) was the prominent Russian evolutionary biologist and the founder of the field of comparative embryology, A.O. Kovalevsky. Since 2000 the general director of the Oceanological Centre of NASU which incorporates IBSS and Marine Hydro-physical Institute has been academician Valery N. Eremeev.

Today, the IBSS is the largest Ukrainian marine center conducting research in the fields of biology, ecology, marine environmental protection, marine ecosystem biodiversity and dynamics, as well as the development of new biotechnologies and methods for integral coastal zone management. Cherishing its 135-year-old academic traditions, the Institute of Biology of the Southern Seas constantly works at improving and expanding its scientific potential, and heartily welcomes international scientific collaborative efforts to complement a significant number of existing joint-international projects.

Main Scientific Research Areas

- adaptational, transformational and evolutionary mechanisms developed by marine and oceanic systems in response to global climate change and man-made influences;
- hydrobiological and biotechnological problems related to integral coastal zone management (rational use of nature, environmental rehabilitation, and sustainable development);
- methods and technologies for the effective environmental control of biota, for the assessment and forecast of marine environment quality, and environmental risks to be dealt with in intensive sea use zones;
- biodiversity in the Black Sea and the Sea of Azov, and steps which would ensure preservation of this diversity;



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The IBSS has been undertaking large-scale investigations of the world's oceans—contributing to the advancement of marine science and environmental protection in Ukraine. The major results obtained over the past few decades include:

- patterns of adaptations that marine organisms, species and populations evolve to in re-sponse to changes in temperature, oxygen content, and nutrient supplies were elaborated for various trophic levels in the pelagic and shelf ecosystems of the Black Sea;
- formerly unknown species inhabiting Black Sea sediments at the depths of 600-2250 m were discovered and registered, and a pioneering discovery was little-known morphological forms found in microbial epibiota of gas-emission zones in the Danube Canyon, and a new concept for the zonal-distribution of life in the Black Sea has been formulated;
- radiochemical ecological principles underlying the methodology for solving problems related to sustainable use of the Ukrainian zone of the Black Sea were formulated, and allowable molismological limits were established for radioactive and chemical pollutants in the examined seawater;
- the role that Black sea methane seeps play in environmental formation and their significance as an indicator of gas-bearing bottom sediment were studied, and the biogenic and geological (thermal) theories explaining the origin of methane emissions were advanced;
- the long-term structure and functional variability of fish eggs and larvae was studied and proposed as an integral characteristic in express-assessment of the environment under man-made influences;
- for the first time the portion that parasites contribute to biodiversity of the Black Sea and the role they play in substance and energy transformation in ecosystems were assessed, the responses of parasitic systems to anthropogenic impacts were studied, and the parasitological concept of marine-culture was developed out;
- mathematical models of substrate-dependent synthesis rates were elaborated for bio-chemical components of marine microalgal cells in regulated culture, the taxonomic revision of green, brown and red algae of the Black Sea was carried out, and the stock of major commercial macrophytes on the Ukrainian shelf evaluated;
- a series of integral functional and morphostructural biomarkers were proposed for assessing the level to which marine ecosystems have been impacted;
- the inventory of toxic and potentially hazardous plankton and benthic microalgae in the Black Sea and the Sea of Azov were determined;
- inter-annual fluctuations of special plankton community diversity in tropical marine environments linked with the spatial position of atmospheric pressure systems and the trends of the long-term variability were determined—a first in the history of marine biology;
- a register of bioluminescent plankton was compiled and a map of bioluminescence fields of the photic layer of the world's oceans schematicized.

